



Ø BEAT



COLORADO SPRINGS,
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MAY 1986

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PIKES PEAK RADIO AMATEUR ASSOCIATION, INC.
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The Pikes Peak Radio Amateur Association meets on the second Wednesday of each month at Giuseppe's Depot Restaurant at 10 S. Sierra Madre at 7:30 p.m. All amateurs and interested parties are invited to attend.

Editor: Phil Somers VE1ARC, 1075 Allegheny Dr. Colorado Springs, CO 80919 590-7136

EDITORIAL NOTES

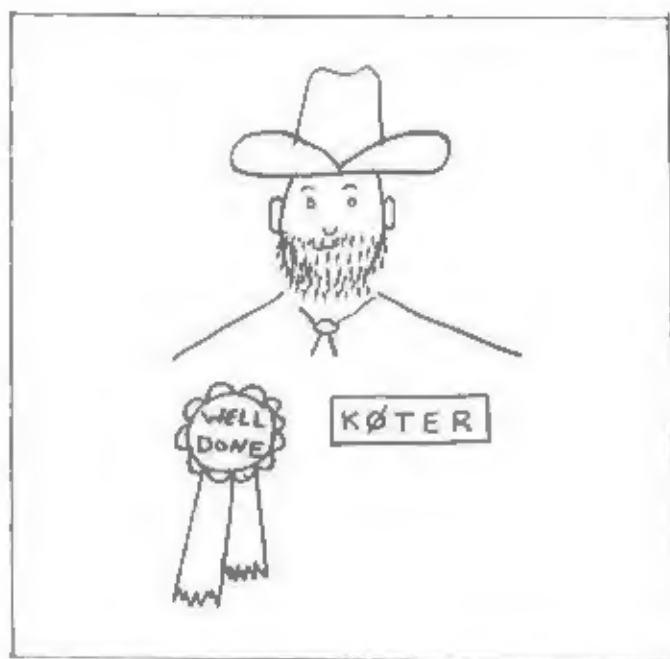
I have heard some preliminary rumors from Dayton. Seems there was a sufficiently large flea market to provide some goodies (10 acres !!!). A new HF transceiver A1? Next month, we should have some details on the Heavention, especially information from the most interesting Forums on various amateur topics.

The big activities over the last month were the two walkathons, the Walk for Mankind and the WalkAmerica March of Dimes. As usual, Mike, KØTER did an outstanding job of organizing the communications. See page 10 for the details. The next such event is the Teller County Hill Climb on 31 May - 1 June. See Doc WOMCT for details if you can help. Volunteers, including a coordinator, are needed for the Pikes Peak Hill Climb in July.

You may notice that there are more articles from local members this month. We even got some technical articles. That is great. It is your newsletter. Keep up the good work. Remember, there will be a prize for the best article in May and June.

The SwapFest is on 17 May at the Rustic Hills Mall. There are still lots of tables available. Sign up for yours. Take a few minutes to pile all that valuable junk you don't really need anymore into a box and sell it. Think of the new junk you can then buy to replace it. Last chance to sell some more raffle tickets. Remember there is a prize for the most tickets sold.

"LOCAL QRM"



PUBLIC SERVICE

WALK FOR MANKIND - 12 APRIL 1986

MARCH OF DIMES - 27 APRIL 1986

"VIEW FROM THE PEAK"

by George Hinds, N8CLX/Ø

Having made Woodland Park our permanent residence, the wife and I are becoming accustomed to living in a small town — it does take time. After living for years near Cleveland, Ohio, being in a community of less than 2000 is different.

Settling in, the quick welcome and sincere warmth we received from the amateurs of Teller County through their club: the Mountain Amateur Radio Club made us feel at home. (I had previously joined PPRAA after many years of reading "Ø Beat" and knowing of the club.)

MARC doesn't lack for enthusiasm: it's ready to serve Teller County in any emergency; further, on the weekend of July 26/27 it will again sponsor the local swapfest held in a beautiful campground in Pike National Forest. The MARC repeater is on 145.16; contact NØSCR, NØCMD or WØJAW for info. MARC will have a booth at the PPRAA swapfest, too, so you can check there for information.

Amateur radio is many things to many different people — it is often remarked how almost everyone can find some phase that particularly "turns them on."

While I've certainly not tried every angle of ham radio, I doubt that anything could be as satisfying as turning out with fellow hams for a "public service" event, whatever that might be: a marathon, a bike or auto race, or SKYWARN.

I can see how some like DX'ing, others contesting, and so forth.

Nothing, however, for me can equal getting together with other hams and having some definite responsibility to perform a service with our rigs through an ability to communicate. An opportunity to show others, whether it be police, politicians or just "John Doe", what a worthwhile service amateur radio operators can do to help others is an opportunity to put something back into amateur radio to foster and preserve the privileges we have in using the spectrum.

Except for handling message traffic for our armed services, what other phase of amateur radio so exposes the value of preserving and encouraging this hobby (or service) to so many people? Helping groups such as the American Heart Association, the National Weather Service, and so many others, presents us in the best possible light to crowds of people. Ham radio needs every bit of good publicity it can get. If, up to now, "public service" activities have not had your help, why not jump in and do so — give it a try and you'll likely find that pitching in with a group of other hams for a few hours on a worthwhile project will make you feel better. The comradeship alone will make it worth your while...try it.

What's the value of knowing formal message structure when you're mostly on 2FM? Even if you are willing to pitch in when an emergency arises, can't you get by with highly informal reporting?

Sometimes, yes. But when the chips are down and a "command post" NCS operation comes into play, officials of police or fire or hospital or military agencies rely upon formal written messages more often than not — there simply has to be a written record of what is needed, etc.

Perhaps this is where packet radio in the future will take its place with SKYWARN and similar public service programs of amateur radio. But until that type of network is in place, there is no substitute for formal written messages in some circumstances.

SO: get a pad of ARRL "RADIOGRAM" message forms and keep them handy. Become familiar in how they are used. Listen in on a formal net and practice copying to fill in message blanks. Be Prepared.

Well, since I'm nearing the end of this sheet of paper, it's time to make a big decision: as sure as I begin a new sheet of paper, I'll run out of things to say. That's "Murphy's Law" again.

73, George N8CLX/Ø

VHF AND ABOVE NEWS
by Ron Deutsch NKOP

The 2nd annual "Microwave Update" conference will be held in Estes Park August 28-31. The conference last year dealt mainly with 1296 and 2304 MHz. This year, the subjects will include some of the other microwave bands, in particular, 3456 and 5760 MHz. Speakers this year include Chip Angle, N6CA; Al Ward, WB5LUA; and Rick Campbell, KK2B. There will be noise figure measuring sessions and antenna gain measurements. There will be swap sessions and equipment displays. This year, an extra effort will be made to ensure new equipment is available to purchase during the conference. Attendance is limited to pre-registered only. For more info or to register, write:

Donald L. Hilliard, WOPW
PO Box 563,
Boulder, CO 80306

For anyone interested in keeping up with what is going on in the world above 50 MHz, there is a net on 3818 KHz each Sunday evening at 0230 GMT. Net control is Kent Britain, W4SVJB. A lot of good info is passed so give a listen!

If any of you are using GasFet preamps, you know how easy they are to destroy. If that isn't bad enough, they are hard to find to boot. After "Applied Invention" quit stocking them, I found another reliable source (so far). "Microwave Components of Michigan" has a good supply of GasFets and other hard to find parts for the microwave experimenter. Their address is:

11216 Cape Cod
Taylor, Michigan 48180

AVANTEK introduced a series of new amplifier chips called Monolithic Microwave Integrated Circuits (MMICs). These devices have a usable gain from DC to beyond 2000 MHz. They are fully cascade-able and, believe it or not, cost under \$5.00 each. I have the spec sheets and an example of the devices if anyone is interested in experimenting with MMICs. I don't know if they are available locally, but you can order them directly from AVANTEK at (408) 496-6710.

Well, Al N6CMW and I are off to Dayton by the time this is in print. Hope to bring back the latest info and bargains. 73's --- Ron NKOP.

More Radials or the Power of Positive
Thinking
by J. R. Sorrells WA9ABB

Everyone knows that when it comes to vertical antennas that the more radials, the better they work.

Several years ago, I put up a home brew ground mounted vertical. The plan called for 24 thirty-three foot radials. After much sweat and several blisters, the plan was changed to six radials. The antenna was used for several days and performed well, but I felt it would do even better with the additional 18 radials. To prevent more blisters, the aid of two young neighbor boys was sought. I showed them what to do and promised each a couple of dollars for their efforts. About an hour later the boys said they had finished and collected their pay. The improvement was astounding. I was hearing more stations, making more contacts, and the SWR was very low. It definitely convinced me of the importance of a good ground and radial system.

The following summer I dismantled the antenna in preparation for a move. What a surprise when I tugged on the radials. Those little rascals had rolled most of them into little balls and planted them at the base of the antenna. At first I was fuming mad, but the more I thought about it the more hilarious it seemed. Just goes to show you what the power of positive thinking will do to improve your antenna system. Give it a try! You might be surprised.

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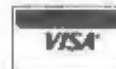
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LOG — PERIODICS

by Chris Smith WB0DHU

The LPDA Antenna Commercial antenna manufacturers have produced "log-periodic" antennas in a big way for at least 20 years. Hams, on the other hand, are relatively unfamiliar with them. Because of the harmonic relationship of the traditional ham bands (80-40-20-15-10), resonant antennas can be effective multi-band antennas. With the new bands opening up at 10MHz, 18MHz and 24MHz, I believe that hams are going to find log-periodic antennas more attractive. The long-favored trap-dipole yagi for 20, 15 and 10 may give way to log-periodic antennas that cover all the ham bands from 10 MHz to 30 MHz and everything in between.

Most commercial log-periodic antennas are "LPDA" types. That stands for log-periodic dipole array, and gets the name from the fact that the repeated element is a dipole. However, other types of radiators also can be scaled in a log-periodic fashion. The antenna referred to in the title is one such, the log-periodic quad array. Mike Baron, KD6XW, and I have been experimenting with this antenna for several years. To date, the work has been done only with a computer. Computer analysis codes, such as NEC of Lawrence



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Livermore National Laboratory, analyze mathematical models of the antenna and predict their performance. The use of computers makes development of optimal designs a much more economic process than "cut and try." I do hope to try out a two-meter "proof of concept" model in the next few months, though. The model should cover 140 MHz through 280 MHz, though I am not set up for 220. To date, the best designs work (on the computer) over a 3 to 1 bandwidth. That is, the upper frequency is at most three times the lower frequency. This limitation seems to be a result of the high frequency elements shorting out the feed line at the lower frequencies.

There are some possible solutions involving transmission lines and/or different ways of achieving the necessary transpositions between the quad elements. We hope to continue investigations into these, as well as encourage further experimentation in the ham community. This brief article is not intended to be a tutorial in the design and construction of LPQAs. I would be glad to discuss them with anyone who is interested. If the test models work out and interest warrants, future articles may give design information. Chris Smith — WB0DHU.

A SIMPLE MOBILE AUDIO AMPLIFIER

by Ken Wyatt, WA6TTY

Many HTs do not have adequate audio output for mobile use; especially in today's small imports, where the noise level is relatively high. This article describes a simple audio power amplifier which may be built inside a mobile speaker enclosure. The amplifier design is based upon a hybrid ic commonly used in many auto stereo tape players. There are two possible choices of ic. Both are nearly identical electrically and both are available from Radio Shack for about three dollars each. The total parts cost including the mobile speaker will run around 25 dollars.

The first choice (requiring the fewest components) is the LM383 (TDA2002), RS part number 276-703. See Figure 1 for the schematic diagram. This device is designed to drive 4 ohm speakers. You may use standard 8 ohm speakers, but the maximum power output will be only 2.5 watts. The gain of this device is 40 dB, thus you will need very little power input in order to drive this amplifier. Since most HTs are capable of producing 200 to 300 mW, you will need a resistive attenuator at the amplifier input. The easiest thing to use would be a low-value potentiometer (10 to 500 ohms). I used a small 15 ohm unit, but just use anything you happen to have handy. Alternatively, you may use two fixed 1/2 watt resistors once you have determined the proper divider ratio.

The second choice of amplifier is the TA7205AP, RS part number 276-705. See Figure 2 for the schematic. This device requires a few more capacitors, but works just as well as the LM383. It is designed to drive 8 ohm speakers and is good for 4.8 watts of output. A similar resistive attenuator should be used on the input.

I built the circuitry inside the speaker enclosure as there is ample room inside. Mount the volume level control at the bottom or the back of the enclosure. Don't forget to bolt a small heat sink

(2" x 3" aluminum sheet, or bigger) to the mounting tab of the ic. Drill a hole in the bottom of the speaker for the input jack or use a hard-wired cable of the correct length to reach your HT.

Once construction is complete, bench test the amplifier. Connect a 12 volt source to the amplifier. Turn the amplifier level control down all the way. Turn the HT on, unsquelch the audio, and adjust the volume to your normal listening level. Leave it there. Connect a patch cord from the earphone jack to the amplifier input and apply 12 volts to the amplifier. Slowly turn up the amplifier level control until the speaker volume is high enough. Squelch the HT and tune it to a repeater station. Make any volume adjustments necessary with the level control. You should obtain ear-piercing volume with the control up all the way.

Mount the amplifier under the dash of your vehicle and run a power cable from switched 12 volts at the fuse box. A good tap point is usually the cigarette lighter fuse. You should now have more than enough audio for those noisy mobile trips!

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Chairman's Welcome

Welcome to the hams from all over the world who will be joining us in San Diego. We are making this "Early Bird" offer to get you to mark your calendar now for a great vacation in Southern California this fall!

Walt Ricks, W6UZL, General Chairman

1986 ARRL NATIONAL CONVENTION!

SAN DieGO

SEPTEMBER 5-7

HIGHLIGHTS

- ARRL, MARS, FCC Forums
- Technical Sessions
- Special Youth Activity
- Public Service Sessions
- VEC License Exams
- Banquet - W00RE & K6DUE
- Ladies Luncheon - W6NAZ
- Alternative Activities
- Old Town & Tijuana Tours
- New Products & Exhibits
- Freq & Deviation Clinic
- Antenna Gain Contest
- World Class "T" Hunt
- Spark Gap Radio Demo
- Hospitality Suites
- Hourly Prizes

YOUTH FORUM

Lead by W00RE, Astronaut Tony England. Experts will expose teenagers to the latest in ham radio "high tech" with hands-on demos.

DINNER DANCE CRUISE

Friday Evening - Romantic boat tour of San Diego bay, open bar, dinner, dancing.

CONVENTION SCHEDULE

Friday September 5

- 1500 Exhibits Open
- 1830 Dinner Dance Cruise
- 2100 Exhibits Close

Saturday September 6

- 0800 Special Interest Group Breakfasts
- 0900 Exhibits Open
- 0900 Tech Sessions & Forums Start
- 1130 Ladies Luncheon
- 1300 Old Town & Tijuana Shopping Tours
- 1300 W00RE Youth Forum
- 1600 ARRL FORUM
- 1700 Exhibits Close
- 1830 Social Hour
- 1930 Banquet
- Midnight Wouff Hong

Sunday September 7

- 0800 Special Interest Group Breakfasts
- 0900 Exhibits Open
- 0900 Tech Sessions & Forums Start
- 1300 "T" Hunt Starts
- 1300 Convention Closes

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Registration After 8/15/86	@ 10.00	
Banquet (Prime Rib)	@ 25.00	
Ladies Lunch (1st 100)	@ 10.00	
Dinner Cruise (1st 100)	@ 33.00	
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Deaf and Blind School Novice Class Field Trip

by J. R. Sorrells WASABB

On the evening of 15 April, 1986, the Deaf and Blind School novice class came to my shack for some on the air activity. Tuning across the 80 meter novice band turned up a nice slow 579 QZ from KA0WKT. I gave him a call and contact was established. It was KA0WKT's first QSO as a novice. His name was Grant and he was only 10 years old. His QTH was Ottumwa, Iowa. For a novice he sure had a nice fist, and one or two of the boys did a fair job of copying the QSO. Grant asked for a QSL card and sent his address. Turns out his dad is also a ham (K0JGH). It was quite a thrill and inspiration for the novice class and me too!

Next we tried out 75 meter phone and made a contact with John K24B in North Carolina. On 40 meters we talked to Dale W0ME0 in Kansas City, Missouri. A short QSO with Doc W0MCT on the 146.37/97 repeater demonstrated 2 meter FM. We also monitored a couple of RTTY stations and some foreign shortwave broadcast stations. I think the class enjoyed "seeing" ham radio in action. It was time for them to leave before we knew it.

The novice classes are usually held on Tuesdays at 7:00 pm at the Deaf and Blind School. You are all invited to come down and join us. If you think of any other activities to help and encourage, be sure to give me a call.

73's
Jim

\$
\$ PRIZE FOR BEST ARTICLE () \$
\$
\$ There will be a special prize for the \$
\$ member who submits the best article \$
\$ that gets published in the May or \$
\$ June issue of Q-Beat. Judging will be \$
\$ by all the members present at the \$
\$ June meeting. \$
\$

WORK WIAW

The ARRL Letter

April 11, 1986

WANT TO WORK WIAW? Because of the many hours devoted to code practice and simulations, WIAW is not available for casual QSO's during the evening. However, there is usually a 30-minute "window" between 11:30 P.M. EDSI and midnight, when WIAW is available for contacts. A number of HQ staff "insomniacs" are operating WIAW nearly every weekend evening during this half-hour. Look for WIAW on 7040 KHz.

MAY MEETING

The next regularly scheduled meeting of the Pikes Peak Radio Amateur Association will be held on Wednesday, May 14 at 7:30 PM at Giuseppe's Depot at #10 S. Sierra St. The tentative program will feature a talk on power supplies.



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WALK FOR MANKIND - 12 APRIL 1986

The Walk for Mankind was a great communications success. Due to the large number of walkers (6500), and lots of comm requirements, 146.58 was very busy all day. I can't imagine how the Walk organizers could possibly have operated without this essential communications. It required a large number of mobiles and hand-held stations. Thanks to all the volunteers for a first class effort.

Mike	KOTER	Net Control Station
Phil	VEIARC	Net Control Station
Doc	WOMCT	Safety Van
Dave	WBOTAG	Walking and Check Point 9
Paul	NEOH	Rover with Walk Director
Larry	KAONLI	Rover with Walk Official
Mark	KAORLS	Rover with Walk Official
Don	NOBFH	Rover with First Aid
Jerry	NOFZN	Rover with Check Pt Chairman
Carlos	WBOLWN	Rover with Entertainment
Karl	NOBYW	Information Booth - AM
Joe	NOENH	Information Booth - PM
Allen	KAOPJD	Check point 1
Harley	KCOTQ	Check Point 2
Dak	KOROL	Check Point 3
Bud	NODDF	Check Point 4
Lee	KCONC	Check Point 5
Al	NOCHW	Check Point 6
Pete	NOLA	Check Point 7
Jack	NOCYS	Check Point 8
Don	WDOHMS	Check Point 9
Wolfe	WOFPG	Check Point 10

WalkAmerica - March of Dimes - 27 Apr 86

The WalkAmerica 25 kilometer walkathon provided another opportunity to provide public service. With a 1000 walkers, the task was not as demanding as the Walk for Mankind. Again, all the communications was very well handled. Thanks to all the volunteers who spent their Sunday at the checkpoints.

Mike	KOTER	Net Control Station
Doc	WOMCT	Net Control Station
Phil	VEIARC	Check Point 1
Al	KAOPJD	Check Point 2
Pam	N9AHA	Check Point 3
Don	WDOBFZ	Check Point 4
Rick	WB7THT	Check Point 5
Bud	NODDF	Check Point 6 - AM
Larry	KAONLI	Check Point 6 - PM
Phil	VEIARC	Check Point 7

Ticket No. _____

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HAM RADIO AND ELECTROICS SHOW

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DRAWING:	May 17, 1986	LICENSE NO.:	861118
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TIME:	3:00 p.m.		

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TAB BOOKS

MINUTES OF APRIL GENERAL MEETING submitted by Al NOCHW, secretary

The general meeting of the Pikes Peak Radio Amateur Association was held on 9 April 1986 at Giuseppe's. The meeting was called to order by Les KCONC at 1930 MST. The regular introductions returned this month with those present giving their name, call and what they were doing in amateur radio. The minutes of the last meeting were approved as printed in Q-Beat.

Committee Reports

Treasurer - Bud NODDF: Balance last month of \$1879.63, income of \$113.25, expenses of \$178.74 leaving a balance of \$1814.64.

RFI - Ron NKOP: One case pending.

Field Day - Mike KOTER: 28-29 June. It will be held at the same location as last year. A map is being made. Oak, KOROL took the VHF station and Chris, WDOQHU will coordinate the novice station. Mike will look after the phone station.

SWAPFEST - Ron NKOP and Jim WA9ABB: SwapFest will be May 17 at Rustic Hills Mall. Grand prize is an ICOM 7000, 25 MHz to 2 GHz all mode. Tickets are \$1.00. Everything is going smoothly. Tickets are printed and for sale at the meeting, and will be available at the Saturday breakfasts.

Education - vacant: Still need a chairman for this committee. One-on-one help to prospective novices is supported. Anyone hearing of potential hams who could use an "Elmer" should contact a board member.

Colorado Council of Amateur Radio Clubs (CCARC) - Bud NODDF: Have heard no word from CCARC.

Public Service - Mike KOTER: Mike handed out the checkpoint assignments to the volunteers for Walk for Mankind on Apr 12. Volunteers were still needed for the March of Dimes on Apr 27 from 8:00 to 16:00.

Deaf and Blind School - Jim WA9ABB: Planning an evening at Jim's QTH to discuss several aspects of amateur radio.

O-Beat - Phil VE1ARC: Thanks for all the good articles. Keep them coming. Prize for the best article in May and June.

Hill Climbs - Doc WOMET: Teller County Hill Climb is on 31 May - 1 Jun (Sat and Sun). Still need 7-8 volunteers. Les KCQNC still trying to get together with Pikes Peak Hill Climb folks.

ARES - Jake NOCYR: Still trying to contact both Penroses about antenna installations. Need volunteers for antenna work.

Prizes - Don WDOHWS: Winners were:
KQOH Bill \$10. Centennial gift certif.
KOROL Oak RTTY ribbon + Hints & Kinks
NOENM Joe ARRL Antenna handbook
KAOVBO Paul a screw, yes, a screw !!!
NODDF Bud Plastic parts box
NOLA Pete 5 reg volts + lottery ticket
NOCYR Jake Crimping tool
NBCIX George \$10. Walker gift certif.
NOFCN Jerry Floppy Disk

Joe, NOENM had luck on his side. Two more of his tickets were drawn but he graciously declined more prizes.

Guest Speaker. The guest speaker was Ms Marlene Barber from the FCC office in Denver. She provided all those present with an envelope containing FCC related material. She spoke of some recent changes, on interference, on literature that is available and on the success of the VE program. She answered a number of questions from the floor. Anyone requiring further info can contact Marlene, or Berl Windsor at the Denver office. It is hoped to get an FCC engineer to attend a future meeting.

Attendance: The meeting was packed with 64 persons in attendance.

MINUTES OF APRIL BOARD MEETING submitted by Al NOCMW

The board meeting was held at 1900 on 14 April 1986 at the home of Al NOCMW. Those in attendance were Les KCQNC, Al NOCMW, Bud NODDF, Jim WA9ABB, Don WDOHWS and Phil VE1ARC. A motion was made to provide the trailer committee with \$200. for paint and repairs to the trailer. Bud NODDF will work with Pete NOLA and others on the project. Jim WA9ABB reported that 700 tickets had been distributed and \$200. had been received to date. The board authorized the expenditure of \$49.11 for layout boards and an electric waxer for O-Beat. Al NOCMW will send a letter of appreciation to the FCC for the visit by Marlene Barber to the general meeting. Don WDOHWS reported that the club SB100 transceiver had been returned to Mike KOTER, the Club Property Custodian.

The next board meeting will be at the home of Jim WA9ABB.

programs for the general meetings are:
April - FCC, May - Weather, June - Field Day.

MILEY'S RADIO

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4/23-5/13 Vacation-Bean Feed-Sierra Vista & Grand Junction
5/16-5/19 Colorado Springs

NEW EQUIPMENT IN STOCK

In Stock! New Kenwood TS 440S \$819 w/AT installed \$949
Kenwood TS 940S \$1549 w/auto tuner \$1695
Kenwood TS 930S Sale \$1249 w/auto tuner \$1399
Kenwood TS 430S w/free mike & FM board \$699
Kenwood TS 830S \$279 — TS 130 SE \$558
PS 430 Power Supply \$134 — PS 30 \$125
Kenwood AT 250 auto antenna tuner for 430S \$290
Kenwood AT 130 tuner \$125 AT 230 Tuner \$170
New Icom 735 \$710
Icom 745 \$765
Yaesu FT 757GX \$699
New "Amp Supply" LA 1000NT 160-15 meter 1200W PEP-800 DC
QSK, no tune up, drives with 100W-list \$529 - SALE \$475
Amp Supply LK500ZB w/o QSK in stock w/10 meters \$950
Kenwood 4000A 2m & 440 FM Xcvr 1st \$699 sale \$499 w/free tone encoder
Kenwood TR 3600 440 MHz HT \$305
Kenwood TR 2600A New HT \$290 with free extra battery
New Kenwood TH21AT \$198 TH41AT \$209 — both with free extra battery
Kenwood TM 2570A 70 watt 2 meter FM mobile \$479
Kenwood TM 2550A 45 watt 2 meter FM mobile \$389
Kenwood TM 2530A 25 watt 2 meter FM mobile \$349
Sinter 200 ET 2mtr. HT \$150
Sinter 400 ET 440 HT \$175
Sinter 20T w/2 number memory dialer-1 only \$285
Complete line of Tokyo High Power amps, preamps & tuners at lowest prices.
New Azden PCS 5000 \$285
Icom 2AT HT Reg. \$269 Now \$198
Icom 62AT \$289
Icom 4AT \$229
Icom 64AT \$325
Icom 27A \$328/Icom 27H \$358
Icom 47A \$398
Icom 3200 2 meter/440 dual bander \$485
Daiva Meters, Switches & Rotors - In Stock
Marage Amps - Low Prices
New KDK FM 240 mini 25W w/TM & LCD display, encoder/decoder \$295
New Yaesu FT 209RH 5 watt FM HT \$289
Yaesu FT 2700RH 2 m-70 cm dual bander full duplex-free encoder \$499 - 1 only
Now a factory dealer for Ten Tec — In stock specials:
Consair II HF xcvr. \$1125
Argosy II HF xcvr. \$559
Century 22 HF CW xcvr \$49
KR1B dual paddle memory keyer \$54
Demo Consair II \$895
Ten Tec 260 p.s. \$150
New generation Ten Tec 2591 2 m HT \$249 - 2 only
Astron PS — ALL AMPS — Low Prices — Astron RS 50 In Stock
Butternut HF6V 80-10 mtr. vertical \$115 160 mtr. adapter \$30
KLM 160V 160/80/40 vertical \$88
KLM 2M14C 2 mtr. circ. 14 ele. beam (oscar) \$88
KLM 4351BC 420-450 10 circ. 10 ele. beam (oscar) 118
B&W AXS 160 shortened 160/30 mtr. dipole 95' long \$94
B&W AXS 80 shortened 80/40/13 mtr. dipole 64' long \$94
B&W AS 80 shortened 80/40/20 mtr. dipole 78' long \$94
Wielz test meters in stock
Now a distributor for Ameritron Amplifiers - AL 80A In Stock \$649
AEA CP-1 Computer Interface \$210
AEA PK 64 packet/cw/rty etc. controller \$199 — HFM \$90
AEA PK 64 system w/HFM 64 installed \$295
Factory Dealer for Kantronics — In Stock!
New Kantronics Packet Program-includes program for LTL
Kantronics Packet Controller version 2 w/HFM \$195
Kantronics Interface for VIC 20 and others \$125
Kantronics Universal Terminal Unit \$160
Kantronics Hamtext Hamsoft \$80
MFJ wet & dry dummy loads — In stock
MFJ Tuners and Keyers — In stock
MFJ 988 roller inductor tuner \$288
MFJ 962 1.5 KW tuner 160 to 10 meters \$219

New MFJ 1224 interface in stock w/free soft program \$90
MFJ 1229 interface w/free soft program \$160
Available Mid April-MFJ 1270 packet controller (TNC-2)
clone \$125.

USED EQUIPMENT

Kenwood TR 2400 \$125
Kenwood TR 2500 \$195
Kenwood TR 3500 \$125
Kenwood TR 3600 — like new \$275
Kenwood TR 9000 all mode mobile \$275
Kenwood TR 7950 \$275
Kenwood TR 7800 \$150
Kenwood VFO 230 \$165
Kenwood 1599/R599 twins w/xcvr, cables \$385
Kenwood TS 930S w/AT — nice in box \$995
Kenwood TS 430S w/AM, CW & SSB filters \$595
Kenwood PS 30 power supply \$100
Icom 2AT \$150
Icom 4AT Demo \$195
Icom 730 \$425
Icom PS 15 power supply \$95
— IC 730 & PS 15 combo for \$500!
Icom 745 \$575
Icom PS 20 p.s. \$150
— combo price \$700
Yaesu FV 101B ext. VFO \$75
Yaesu FT480R 2 mtr. all mode \$275
Yaesu FT100B New in box \$375
Yaesu FT100B used, mint \$325
Yaesu FT-2 Auto 8 channel scanning xtal. 2 mtr. 170/220/13.8V base/mobile \$75
Leader LAC 895 tuner 80-10 mtr. \$75
Heath HL 2200 (2) 3-500E 2KW PEP, built by expert \$725
KLM 2-140 2 meter FM only amp. 2 in/140 out \$135
KLM PA 10-40 2 mtr. amp. 10 in, 40 out \$55
KLM PA 10-35/C 440 FM amp. 5-15 in, 35 out \$65
VHF Engineering 10/140W 2 meter amp \$95
AEA CP1/64 w/NABA TestPac \$150
Drake T4XB, K4B, M4S 4 ps/spkr \$250
Swan 350 — nice shape w/p.s., spkr. \$150
Xenpro KR 400 rotor and controller \$85
Sony ICF 2001 general coverage receiver \$150
Radio Shack Color Computer II w/cassette \$125
Radio Shack ink jet graphics printer \$125
Wide selection of amateur antennas—base, mobile, HF, VHF, UHF at reduced prices. We stock most of the better antenna companies products.
We carry a complete selection of books by ARRL, Ameco, and the Callbook
New B6 ARRL Handbooks — list \$18 — sale \$17. Limited qty.
New B6 Callbooks \$1.95 off cover price
"We handle anything electronic and love to trade!"
Much more used & convenient gear — call for info
4/86

NOTE:

Due to Miley's Radio vacation/sawapfest schedule, we were unable to get a revised listing of equipment for this month's ad. If you have any questions about prices or availability of gear, please call Jess at the number above or see him at the PPRAA Swapfest May 17.

Membership Application PIKES PEAK RADIO AMATEUR ASSOCIATION, INC.

P.O. Box 16521
Colorado Springs, CO 80935

Name _____

Address _____

City _____ State _____ Zip _____

Call _____ License Class _____

Are You An ARRL Member? ☐ Yes ☐ No Telephone _____

☐ Full Member \$12.00 ☐ Family Membership \$15.00 ☐ Newsletter Only \$4.00

Additional Names _____ Call _____ Class _____

Associate Member \$8.00 ☐ (Outside Teller & El Paso Counties.)